

8231



**Work Plan
AREE 69B and AREE 63Q**

**Base Realignment and Closure
Environmental Evaluation (BRAC EE)
Fort Devens, Massachusetts**

Submitted to

**U.S. Army Environmental
Center (USAEC)
Aberdeen, Maryland**

**Revision 0
December 1995**

DISTRIBUTION STATEMENT A

**Approved for public release
Distribution Unlimited**

**Arthur D. Little, Inc.
Acorn Park
Cambridge, Massachusetts
02140-2390**

19971002 086

ADL Reference 67065

**DAAA15-91-D-0016
Delivery Order 0005**

DTIC QUALITY INSPECTED 4

Work Plan

AREE 69B and AREE 63Q

Arthur D Little

**Base Realignment
and Closure
Environmental
Evaluation (BRAC EE)
Fort Devens,
Massachusetts**

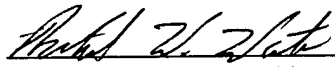


Program Manager, Robert Lambe

12-13-95
Date

Submitted to

**U.S. Army Environmental
Center (USAEC)
Aberdeen, Maryland**



Task Manager, Richard Waterman

12-13-95
Date

**Revision 0
December 1995**

**Arthur D. Little, Inc.
Acorn Park
Cambridge, Massachusetts
02140-2390**

Distribution unlimited approved for public release.

ADL Reference 67065-13



This document is printed on
recycled paper and is recyclable.

**DAAA15-91-D-0016
Delivery Order 0005**

Table of Contents

List of Acronyms and Abbreviations	ii
1.0 Introduction	1
1.1 Objective	1
1.2 Field Investigation Techniques	2
1.3 Quality Assurance/Quality Control	2
2.0 Past Spill Site - AREE 69B	3
2.1 Site Investigation Procedures	3
2.1.1 Sampling Procedures	3
2.1.2 Document Review	3
3.0 Previously Removed Underground Storage Tanks - AREE 63Q	4
3.1 Sampling Procedures	4

List of Figures

- Figure 1: AREE 69B, Building 2602 - Sampling Locations
Figure 2: AREE 63Q, Building 2626 - Boring Locations

List of Tables

- Table 1: AREE 69B - Summary of Sampling Activities
Table 2: AREE 63Q - Summary of Sampling Activities

List of Acronyms and Abbreviations

AREE	Area Requiring Environmental Evaluation
BCT	Base Closure Team
BRAC EE	Base Realignment and Closure Environmental Evaluation
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CERCLA	Comprehensive Environmental Response Compensation, and Liability Act of 1980
GC/MS	Gas Chromatography/Mass Spectrometry
IAG	Interagency Agreement
IRDMIS	Installation Restoration Data Management Information System
MADEP	Massachusetts Department of Environmental Protection
NED-USACE	New England Division of the U.S. Army Corps of Engineers
NFA	No Further Action
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
SVOC	Semivolatile Organic Compound
TPHC	Total Petroleum Hydrocarbons
USAEC	United States Army Environmental Center
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 Introduction

The U.S. Army Environmental Center (USAEC) has requested Arthur D. Little, Inc. to perform a supplemental sampling event at two Areas Requiring Environmental Evaluation (AREEs). AREE 69B and AREE 63Q were included in the Base Realignment and Closure Environmental Evaluation (BRAC EE). An environmental evaluation including soil and ground water sampling was conducted at AREE 63 and AREE 69 sites in 1994. The environmental evaluation recommended further evaluations at AREE 69B. A supplemental sampling event was performed in July 1995 that involved resampling the five ground water monitoring wells at AREE 69B. Based upon the results of the July 1995 sampling, additional sampling was recommended at AREE 69B to fully determine the nature of the residual contamination at the site and determine the need for further action.

During the Base Closure Team (BCT) meeting in November 1995, the Massachusetts Department of Environmental Protection (MADEP) requested that AREE 63Q be resampled. During the BRAC EE performed for AREE 63 sites in 1994 an underground storage tank (UST) was discovered in the vicinity of AREE 63Q. The New England Division of the U.S. Army Corps of Engineers (NED USACE) removed the tank in 1995 and the site has been recommended for no further action (NFA). The tank, however, was located approximately 30 feet to the southwest of AREE 63Q. As a result, the MADEP has requested that the BRAC EE for AREE 63Q be completed.

1.1 Objective

AREE 69B

The data from the Supplemental Site Evaluation performed in 1994 indicated total petroleum hydrocarbon (TPHC) contamination in the ground water wells located closest to the USTs at Building 2602 (*Final Past Spill Sites Report, AREE 69, Volume I and II, June 1995*). The data from the Supplemental Sampling Event performed in 1995, indicated that the TPHC contamination was located in the ground water wells located the farthest from the UST at Building 2602 (*Addendum Report for the AREE 70, AREE 69B and Cold Spring Brook Supplemental Sampling Event, Revision 0, November 1995*). As a result of these studies, no definitive determination could be made regarding the residual TPHC contamination at the site. A significant seasonal and interseasonal variance in the ground water levels in the monitoring wells was noted. Furthermore, all further action determinations for AREE 69B has been based upon TPHC contamination. The infrared method for determining TPHC has been the primary method used for detecting contamination. This method can be prone to interferences from other sources besides petroleum contamination.

The objective of this Supplemental Sampling Event, is to sample the five existing ground water monitoring wells to determine whether there is any indication of residual petroleum contamination in the ground water at AREE 69B and to try to determine the nature of the petroleum contamination. The results of the investigation will identify whether the site can be recommended for NFA, recommended for

1.0 Introduction

inclusion in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process under the Interagency Agreement (IAG), or recommended for a removal action.

AREE 63Q

AREE 63Q is the previously removed UST at historical Building 2626. This building was demolished during the site preparation for the construction of Building 2602. The Work Plan for AREE 63Q originally proposed installing four ground water monitoring wells at this location (*Underground Storage Tank [AREE 63] Memorandum Work Plan, Revision 1, February 194*). During the geophysical clearance performed at AREE 63Q in 1994, an existing UST was found approximately 30 feet to the southeast of historical Building 2626. This tank was subsequently removed by the NED-USACE and no residual contamination was detected at the site. During the BCT meeting in November 1995, the MADEP requested that AREE 63Q be further investigated to ensure that no residual contamination is present.

The objective of this sampling event is to collect soil samples from the previously removed UST location at historical Building 2626 to determine if there is any residual soil or potential ground water contamination. The results of the investigation will identify whether the site can be recommended for NFA, recommended for inclusion in the CERCLA process under the IAG or recommended for a removal action.

1.2 Field Investigation Techniques

Arthur D. Little will follow standard operating practice and field sampling techniques for soil and ground water sampling used in other studies at Fort Devens. These techniques can be found in the *Final Quality Assurance Project Plan, Fort Devens Massachusetts, Volumes I and II, June 16, 1993*.

1.3 Quality Assurance/Quality Control

All samples will be submitted to a USAEC performance-demonstrated laboratory for analysis. Quality assurance (QA) samples will be collected at frequency specified by the USAEC in accordance with the procedures in the *Final Quality Assurance Project Plan, Fort Devens Massachusetts, Volumes I and II, June 16, 1993*. All sample results will be entered into the Installation Restoration Data Management Information System (IRDMIS) database.

The following quality control (QC) samples will be collected during this sampling event: one field blank, two equipment blanks, one field duplicate, one matrix spike duplicate.

2.0 Past Spill Site - AREE 69B

2.1 Site Investigation Procedures

2.1.1 Sampling Procedures

Ground water from the five ground water monitoring wells located to the west of Building 2602 will be sampled for TPHC, volatile organic compounds (VOCs), metals, and semivolatile organic compounds (SVOCs). The wells that will be sampled are UST-01, UST-02, GE-01, GE-02, and GE-03. See Figure 1 for the location of these wells. Table 1 summarizes the sampling event at this site.

TPHC will be analyzed using a gas chromatography/mass spectrometry (GC/MS) method. This method is more accurate than the standard infrared analytical technique and will be able to more exactly identify the type of petroleum contamination at AREE 69B. All samples will be submitted to a USAEC performance-demonstrated laboratory for analysis.

2.1.2 Document Review

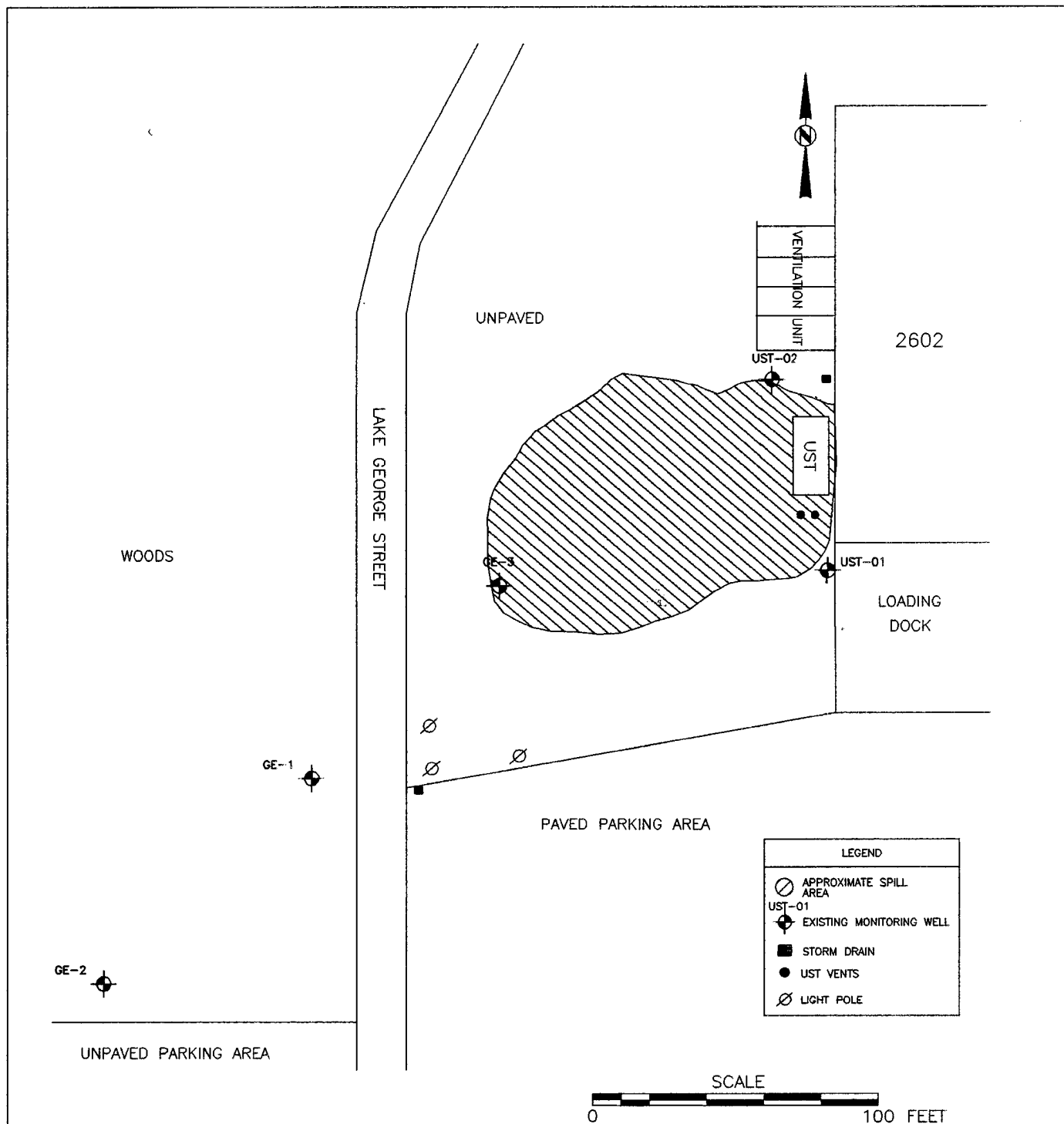
The following documentation review will be performed to support the field investigation:

- Quarterly ground water elevation records will be reviewed to establish seasonal and interseasonal trends in the ground water elevations. The elevation records from 1992 to present will be examined.
- If available, the construction logs for the ground water monitoring wells will be reviewed to determine well construction.
- If available, leak monitoring and inventory records of the UST will be reviewed to determine the potential for any releases of petroleum products from the tank.

3.0 Previously Removed Underground Storage Tanks - AREE 63Q

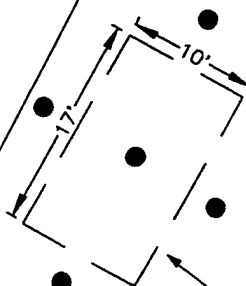
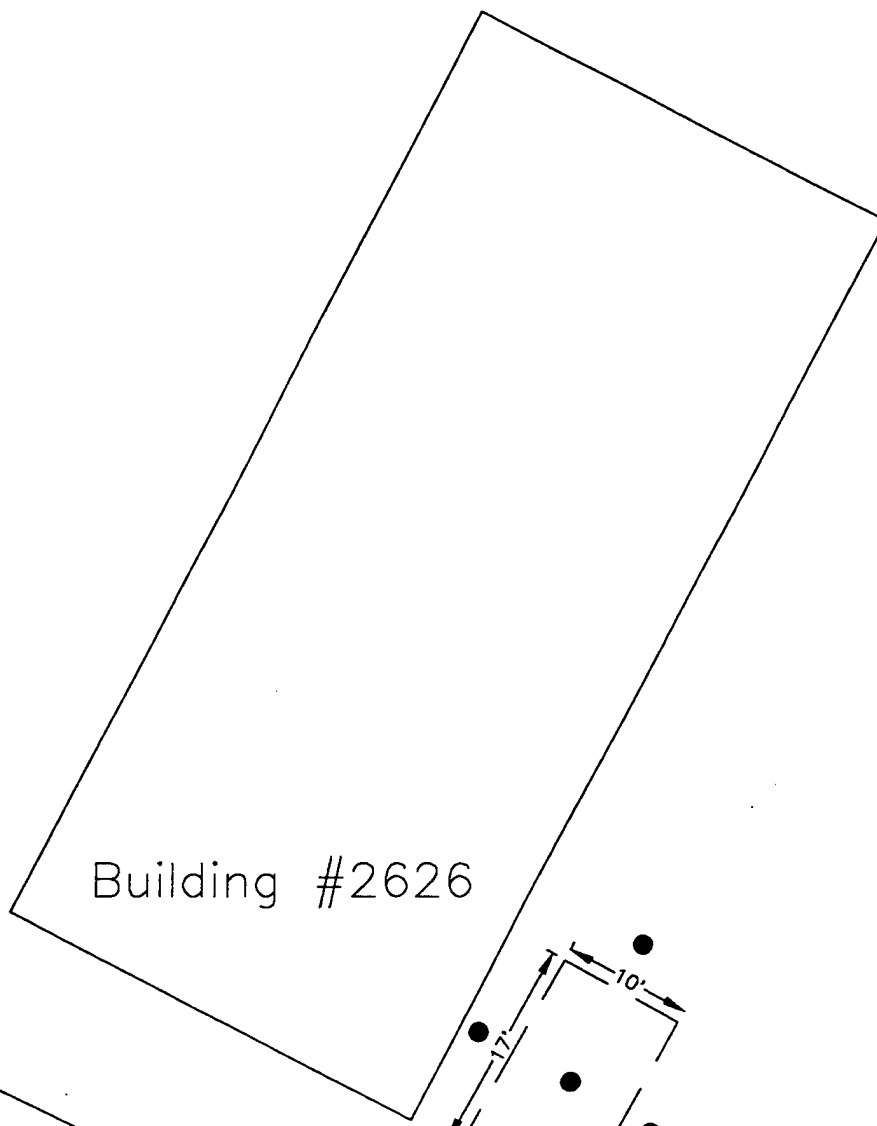
3.1 Sampling Procedures

Five soil samples will be collected from AREE 63Q. Soil will be sampled using a continuous split-spoon method where a split-spoon sampler will be driven into the soil around the original UST grave. The soil will be screened using a photoionization detector (PID), and will be screened until ground water is encountered or to 12 feet below ground surface, whichever is encountered first. Field conditions such as seasonal variations in the ground water table may require adjustment to the sampling program. A soil sample will be collected below the depth of the UST excavation at 8 feet below ground surface. The sample will be submitted to a USAEC performance demonstrated-laboratory for analysis for TPHC and benzene, toluene, ethylbenzene, and xylene (BTEX). One soil boring will be advanced on each side of the former tank grave and one boring advanced in the center of the former tank grave. See Figure 2 for the location of the boring locations. Table 2 summarizes the sampling event at this site.



Arthur D Little		TITLE	
		FIGURE 1: AREE 69B, BLDG 2602 SAMPLING LOCATIONS	
APPROVALS	DATE	PREPARED FOR	SCALE
DRAWN		USAEC	1" = 50'
CHECKED		DATE	DWG. NO.
QA/CONTROL		DEC. 1995	67065-186
TECH REVIEW		SOURCE	
PROJ MNGR		ARTHUR D. LITTLE, INC.	SHEET 1 OF 1

REV. #	REVISION DATE



Approximate Location of
Previously Removed 1,000
Gallon #2 Fuel Oil UST

PREPARED FOR: USAEC	
DATE: 9/93	DWG. NO.: MOT2626A
SCALE: 0 30 FT	

Legend

● Boring Locations

TITLE:

Figure 2: AREE 63Q, Building 2626
Boring Locations

Table 1: AREE 69B - Summary of Sampling Activities

Site ID	Field Sample ID	Site Description	Sample Location	Media	Analysis
UST-01	GXUT01__*	AREE 69B	Monitoring Well UST-01	Ground Water	TPHC (using GC), SVOC, Metals
UST-02	GXUT02__*	AREE 69B	Monitoring Well UST-02	Ground Water	TPHC (using GC), SVOC, Metals
GE-01	GXGE01__*	AREE 69B	Monitoring Well GE-01	Ground Water	TPHC (using GC), SVOC, Metals
GE-02	GXGE02__*	AREE 69B	Monitoring Well GE-02	Ground Water	TPHC (using GC), SVOC, Metals
GE-03	GXGE03__*	AREE 69B	Monitoring Well GE-03	Ground Water	TPHC (using GC), SVOC, Metals

* The complete field sample identification will be completed the day of the sample event and include QA/QC sample codes.

Table 2: AREE 63Q - Summary of Sampling Activities

Site ID	Field Sample ID	Site Description	Sample Location	Media	Analysis
63Q-95-01	BXB3Q-1B*	AREE 63Q	North wall of UST excavation	Soil	TPHC (using GC), BTEX
63Q-95-02	BXB3Q-2B*	AREE 63Q	East wall of UST excavation	Soil	TPHC (using GC), BTEX
63Q-95-03	BXB3Q-3B*	AREE 63Q	South wall of UST excavation	Soil	TPHC (using GC), BTEX
63Q-95-04	BXB3Q-4B*	AREE 63Q	West wall of UST excavation	Soil	TPHC (using GC), BTEX
63Q-95-05	BXB3Q-5B*	AREE 63Q	Center of UST excavation	Soil	TPHC (using GC), BTEX

* The complete field sample identification will be completed the day of the sample event and include QA/QC sample codes.